How do your predicted and measured masses compare? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The mass difference would suggest that: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How could we improve our test for next time? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Measured mass after reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams

Description of Products:

**Predicted mass after reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_ grams

**Mass of Reactants before reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams

Description of Reactants:

**Demonstration #2**: water + alka seltzer 🡪 product

**Summary**:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. +2

**Applying Conservation of Mass:**  Calcium + Oxygen 🡪 Calcium oxide

40g ? 100g

**Law of Conservation of Mass:**

**Measured mass after reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams

Description of Products:

**Mass of Reactants before reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams

Description of Reactants:

**Predicted mass after reaction:**

\_\_\_\_\_\_\_\_\_\_\_\_ grams

**Prediction and Observation:**

**Test Reaction**: Iron (III) nitrate + Sodium hydroxide 🡪 Iron (III) hydroxide + sodium nitrate

**DEMONSTRATION**: **Allow two chemicals to react in a CLOSED container**

**PROCEDURE**: 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Why is it important that the container be closed?**

**Example: Hydrogen gas + Oxygen gas 🡪 Water**

A chemical reaction can be represented by a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

**QUESTION:**

Date:

**Chemical Reactions and the Conservation of Mass**

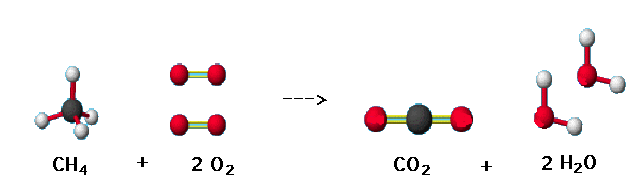
SNC2DO

**Questions:**

1 a) State the Law of Conservation of Mass. How is this explained in terms of atoms?

b) Why is it important that we performed the demonstration of conservation of mass in a closed container?

2. The picture below represents the burning of methane (natural gas) in oxygen. The word equation for this reaction is: methane + oxygen → water + carbon dioxide



1. Count the number of atoms of each type and record them in the table below.

|  |  |  |
| --- | --- | --- |
| **Atom Type** | Number of atoms in reactants | Number of atoms in products |
| Carbon |  |  |
| Oxygen |  |  |
| Hydrogen |  |  |

1. What do your results suggest about the Law of Conservation of Mass?

3. When 24 g of Magnesium is burned in oxygen, 40 g of magnesium oxide product is formed. The word equation is: **Magnesium + oxygen → magnesium oxide.** How many grams of oxygen reacted? Show your work.

4. When sodium metal reacts with chlorine gas, the sodium chloride is formed as shown below.

**Sodium + Chlorine** **→ Sodium chloride**

If 23 g of sodium reacted with 35 g of chlorine gas in a closed container, what mass of sodium chloride is formed?

5. Solution A has a mass of 60 g. Solution B has a mass of 40 g. When they are mixed a chemical reaction occurs in which a gas is produced. If the mass of the final mixture is 85 g, what mass of gas is produced?

6. When a log burns in a fire, the ashes have a much lower mass than the log. Explain this observation.